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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

GROSS, CARSON ALAN

ART UNIT

PAPER NUMBER

4122

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,481	Applicant(s) MARIS, GIANFRANCO	
	Examiner CARSON A. GROSS	Art Unit 4122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/03/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 14 is objected to because the lines are crowded too closely together, making reading difficult. A space is required between claims 13 and 14.
2. Claim 14 objected to because of the following informalities: the first line should read "...according to any *one* of the..." Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 1 provides for the use of at least two two-screw extruders, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35

U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

For examination purposes, it has been construed that the applicant intends to use the extruders to mix and compress the composition.

6. Claim 10: The improper phrasing of the Markush group renders the claim indefinite because it is unclear which members of the group are part of the claimed invention. Markush groups must be stated in the alternative, of which one acceptable form is "...selected from the group consisting of A, B and C." See MPEP § 2173.05(h).

7. Claim 14: The applicant gives ranges of values for the ratio between the outer diameter and inner diameter of the screws. In a typical extruder this ratio is not constant, but rather it changes in different screw zones of the extruder. For example, most extruders have a feeding zone, a melting zone, and a metering zone, each with its own unique depth. It is unclear where in the extruder the applicant intends to define this range. For examination purposes, it is construed that the applicant intends to define the range for the ratio within the metering zone.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-8, 10-12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satas, Don. Handbook of Pressure-Sensitive Adhesive Technology. New York: Van Nostrand Reinhold Company Inc., 1982 in view of Brinkmann et al., USP 5,358,693.

Satas teaches the process for production of a composition comprising rubber, a hydrocarbon resin, and a solvent. In particular, butyl rubber, which is synthetic, is used in conjunction with a hydrocarbon resin, designed to impart tack, or adhesiveness, and a solvent, such as hexane. See page 276, paragraph 1; page 283, paragraph 2; page 285, paragraph 2.

Satas does not teach the use of two-screw extruders in series to process the composition. Satas also fails to teach a temperature of the composition within the second extruder that is less than the temperature of the composition within the first extruder. Lastly, Satas fails to teach where in the process the components are introduced and whether they are introduced all at once or in a fractionated way.

Brinkmann teaches the use of two two-screw extruders in series. See col. 7, lines 45-50.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use two twin-screw extruders in series. The use of these twin-

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screw extruders in series requires fewer operators than previous methods, making it more cost effective. See col. 5, lines 1-4.

Brinkmann also teaches cooling the composition within the second extruder, reducing it to a temperature less than the temperature of the composition within the first extruder. See col. 11, lines 48-50.

It would have been obvious at the time of invention to cool the composition leaving the first extruder. Brinkmann teaches that such cooling is necessary to prevent unwanted, premature curing of the composition. See col. 7, lines 4-9.

Brinkmann teaches that the twin-screw extruders may have multiple openings in which to add components of the composition at various points in the process. See figures 1 and 2, parts 5-6, 22-26.

Brinkmann teaches adding the rubber at the initial section of the first extruder. See col. 6, lines 43-45. Brinkmann also teaches that other components of the composition can be added to the initial section of the first extruder. See col. 6, lines 48-52.

It would have been obvious at the time of invention to add the rubber and the hydrocarbon resin at the initial section of the first extruder because adding both components at the initial section allows for maximum mixing compared to adding them later in the process. This additional mixing results in a more homogeneous product,

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which is what Brinkmann teaches as the desired outcome of the first extruder. See col. 6, lines 53-54.

Brinkman also teaches that further components can be added downstream from the initial section of the first extruder. See col. 6, lines 55-57.

It would have been obvious at the time of invention to add the hydrocarbon resin in a fractionated way, with some being added at the initial section of the first extruder and the remaining fraction added at a point downstream from the initial section of the first extruder. While adding all of the resin at the initial section provides the most mixing, it also results in the most work being done by the extruder. This work translates into heat that raises the temperature in the extruder. If this heat raises the temperature above the desired level of 150-160°C, then it is advantageous to add some of the resin later in the process, which results in less heat in the system. If the temperature of the composition leaving the first extruder is lowered by adding the resin downstream, less cooling is required before entering the next extruder, which saves energy and results in a cheaper process. Costs are reduced further because less energy is required for operating the first section of the first extruder if less resin is present.

Brinkmann teaches that the extruders also have a plurality of devolatilizing openings where the volatile constituents, such as the solvent, are conducted away from the extrudate. See col. 10, lines 32-35.

It would have been obvious at the time of invention to add the solvent downstream from the initial section of the first extruder, whether at one or more points in

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the process including the point between the first and second extruders. This addition of solvent downstream replaces the solvent lost through the devolatilizing openings. Satas teaches that changes in the solution, such as those brought about by the loss of solvent, can have a great impact on viscosity. See page 285, paragraph 4. Replacing lost solvent ensures that enough solvent is present to keep the viscosity of the solution in the proper range for flow through the extruders.

10. Claims 9 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Satas, Don. Handbook of Pressure-Sensitive Adhesive Technology. New York: Van Nostrand Reinhold Company Inc., 1982 and Brinkmann et al., USP 5,358,693 as applied to the claims above, and further in view of Plamthottam et al., USP 4,906,421.

Satas and Brinkmann teach the process for producing a composition comprising rubber, a hydrocarbon resin, and a solvent as detailed above.

Satas and Brinkmann fail to teach the use of co-rotating two-screw extruders and rotation speeds for the first and second extruders between 20 and 300 rpm and 60 and 600 rpm, respectively.

Plamthottam teaches that the two-screw extruders are of the co-rotating type. See col. 18, line 20. Plamthottam also teaches two-screw extruder operation at 100 to 120 rpm. See col. 19, lines 7-8.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a co-rotating type extruder disclosed by Plamthottam in the process

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disclosed by Brinkmann because Plamthottam teaches that the arrangement of screw elements are selected to accomplish desired tasks and that co-rotating type screws are preferred for mixing and conveying an adhesive mixture in a twin-screw extruder. See col. 8, lines 51-54, 65-68; col. 9, lines 1-2.

At the time of the invention, it also would have been obvious to a person of ordinary skill in the art to operate the extruder within the ranges of the instant application since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges involves only ordinary skill in the art. See MPEP 2144.05(II) and *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

11. Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Satas, Don. Handbook of Pressure-Sensitive Adhesive Technology. New York: Van Nostrand Reinhold Company Inc., 1982 and Brinkmann et al., USP 5,358,693 as applied to the claims above, and further in view of Utracki, L.A. Polymer Blends Handbook, Volumes 1-2. Springer – Verlag, 2002.

Satas and Brinkmann teach the process for producing a composition comprising rubber, a hydrocarbon resin, and a solvent as detailed above.

Satas and Brinkmann fail to teach a particular range for the ratio between the outer diameter and inner diameter of the screws.

Utracki teaches that the depth of the screws, which is the difference between the inner diameter and outer diameter, affects the ability to provide satisfactory pumping while avoiding overheating. See page 691, paragraph 2. Therefore, the depth, which is directly related to the ratio defined by the applicant, is known in the art to be a result effective variable. Accordingly, the depth, which would dictate the ratio defined by the applicant, would have been readily optimized.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARSON A. GROSS whose telephone number is (571)270-7657. The examiner can normally be reached on M-F 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CARSON A GROSS/
Examiner, Art Unit 4122

/Milton I. Cano/
Supervisory Patent Examiner, Art Unit 4122